

## **2.11 Water Quality and Water Resources**

### **2.11.1 Groundwater Resources**

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to [1996 FEIS, Section 2.11.1](#).

### **2.11.2 Surface Water Characteristics**

No substantive change has occurred to surface water characteristics of streams since publication of the 1996 FEIS except for the upper the upper Black Partridge Creek watershed. A significant change has occurred in the land-use within this watershed.

Since publication of the 1996 FEIS, a significant change has occurred in the land-use within the upper Black Partridge Creek watershed. Over the past three to four years, the on-going construction of an extensive industrial complex (warehouse distribution centers, light industry and office building complexes, their transportation corridors) has resulted in extensive changes to the entire Black Partridge Creek basin, most specifically to its two headwater tributaries. These changes include 1) periodic interruption, diversion, reduction and possible elimination of cool surface and groundwater flow; 2) extensive, poorly controlled erosion and subsequent siltation; 3) an increase in average water temperatures in the primary headwater reach of Black Partridge Creek from recently constructed shallow landscaped ponds (i.e., increased surface water runoff and intensive solar gain of ponded water); 4) the extensive removal of deciduous and other riparian vegetation from both headwater tributaries; and 5) the possibility of periodic point source contamination from industry.

These occurrences have compromised water quality and the preferred habitat for the mottled sculpin (*Cottus bairdi*), other fishes and aquatic macroinvertebrates throughout the Black Partridge Creek basin.

Black Partridge Creek still supports a fish community with the diversity and abundance of fishes similar to that supported by other streams of its size in northern Illinois. The mottled sculpin (*Cottus bairdi*) still occurs in large numbers in the area either side of Bluff Road, and was the most abundant species encountered during the 9 February and 19 May 1999 surveys. The absence of the central mudminnow (*Umbra limi*) and largemouth bass (*Micropterus salmoides*) during our 1999 surveys does not represent a biologically significant trend. Both species most likely emigrate and re-invade Black Partridge Creek periodically from other habitats (i.e., the Des Plaines River or sedge meadows along the lower reaches of Black Partridge Creek). The absence of fishes at Site 4 was also observed during each of the four 1994 visits – reflecting the seasonal characteristics of this intermittent tributary rather than suggesting a decline in suitable habitat for fishes.

Tables 2-12 and 2-13 provide a summary of the biological and physical characteristics of the streams within the Project Corridor based on the 2000 Water Quality Technical Report. Refer to [1996 FEIS, Section 2.11.2](#).

### **2.11.3 Wetlands**

A reevaluation of wetland resources surveyed and described by Tessene, Morris and Brooks and Tessene and Morris ([Brooks, 1992](#)) was conducted in June 2000 by Plocher and Tessene of the Illinois Natural History Survey (INHS) ([Plocher, 2000](#)). Sites examined were

12/18/00

<b>Table 2-12</b> <b>Summary of Physical and Biological Characteristics of Streams within the Project Corridor</b>								
Stream	Total Drainage		Drainage Area above the Project sq km (sq mi)	Flow Characteristics <sup>1/</sup>	Substrate <sup>2/</sup>	# of Fish Species Present <sup>3/</sup>	Aquatic Environment Classification System <sup>3/</sup>	Watershed Characteristics.
	Length, Kilometers (miles)	Area, Sq km (sq mi)						
Tributary to Hickory Creek	4.8 (3.0)	6.7 (2.6)	3.1 (1.2)	I	silt and clay	--	--	Agricultural
Spring Creek	25.7 (16.0)	51.8 (20)	32.4 (12.5)	P	50% gravel 35% sand 10% silt 5% rubble	13	Unbalanced	40% of length channelized, agricultural and recreational land
Fraction Run	9.2 (5.7)	16 (6)	7.8 (3.0)	I	40% clay 30% sand 30% gravel	8	Semi-polluted to unbalanced	Channelized downstream, agricultural
Fiddymet Creek	6.0 (3.7)	13 (5)	7.0 (3.0)	P	silt, gravel, muck	--	--	Forested and agricultural areas
Big Run Creek	4.0 (2.5)	8 (3)	2.1 (0.8)	I	sand and clay	--	--	Forested and agricultural areas
Long Run	23.5 (14.6)	73 (28)	57.5 (22.2)	P	mud over gravel, silt	4	Unbalanced	Residential, forested and agricultural areas
Illinois and Michigan Canal	23.5 (14.6)	140 (55)	N/A	PNF	bedrock covered with silt and gravel	--	--	Industrial
Chicago Sanitary and Ship Canal	50.9 (31.6)	1,900 (750)	N/A	P	bedrock covered with sand and gravel	--	--	Extensive urban and industrial development
Des Plaines River	188.3 (117.0)	3,538 (1,366)	1,772 (684.0)	P	bedrock covered with sand and gravel	11	--	Extensive urban and industrial development
Black Partridge Creek	2.7 (1.7)	8 (3)	0.5 (0.2)	I	mixture of sand, gravel, pebbles & silt	6	Semi-polluted	Commercial, agricultural and forested areas

1/ Flow characteristics taken from U.S.G.S. topographic maps (Romeoville and Joliet Quadrangles)

I = Intermittent Flow; P = Permanent Flow; PNF = Pooled, No Flow

2/ Data from Ceas, et al., 1989, and Huff and Huff site visit in October, 2000.

3/ Data from Wetzel, et al., 1990. Classification system based upon the numbers and kind of aquatic macroinvertebrates collected and their assignment to one of four categories which reflect a species tolerance to a polluted environment.

<b>Table 2-13</b> <b>Water Quality Characteristics in the Project Corridor Based on IEPA Designated Use Classification<sup>1/</sup></b>						
Stream	Designated Use					Sources <sup>3/</sup>
	Overall Use	Fish Consumption	Aquatic Life	Swimming	Causes <sup>2/</sup>	
Hickory Creek	Partial support	Use exists, no data available	Partial support	Non-support	Suspended solids Salinity/TDS/Chlorides Metals Nitrates Phosphorus Nutrients Organic enrichment Other habitat alterations	Construction Municipal point sources Combined sewer overflows Land development Urban runoff/storm sewers Flow regulation/modification Industrial point sources
Spring Creek	Partial support	Use exists, no data available	Partial support	Use exists, no data available	Source unknown	Source unknown
Long Run	Full support	Use exists, no data available	Full support	Use exists, no data available	--	--
Chicago Sanitary and Ship Canal	Full support	Use exists, no data available	Partial support	Use does not apply to water body	Phosphorus Nitrogen Metals Organic enrichment Other habitat alterations Nutrients Pathogens pH	Municipal point sources In-place contaminants Industrial point sources Channelization Combined sewer overflow
Des Plaines River	Partial support	Full support	Partial support	Non-support	Nutrients Salinity/TDS/Chlorides Organic enrichment Metals Suspended Solids	Urban runoff/storm sewers Municipal point sources Highway maintenance, runoff Land development Construction Combined sewer overflow

1/ Data taken from IEPA, Water Quality Technical Report, 2000.

2/ Causes – indicates causes of impaired use and the magnitude to which the cause contributes to the use impairment.

3/ Sources – indicates the sources that contribute to the causes above the magnitude to which the source contributes to the use impairment.

within or near a 305 meter (1,000 foot) wide corridor approximately following the proposed centerline of the I-355 South Extension. In the last eight years, the vast majority of the plant communities at these sites have undergone significant shifts in species dominance.

Therefore, new wetland delineations were performed on all sites considered to be wetlands in the previous reports. The significant physical alteration or natural change observed at some of the sites is described in the 2000 Wetland Technical Delineation Report (Plocher, 2000). Of the forty-two sites previously examined, six had been physically altered, generally by earth moving activities; one site completely drained, and one completely filled. Four sites exhibited significant increases in the shrub component, four sites showed obvious decreases in species diversity, and the remaining 28 sites still present remained unchanged except for shifts in dominance. The additional plant communities in the wetland complex at Site 9 not described in the previous wetland report are described and delineated in the 2000 Wetland Technical Delineation Report completed by Plocher and Tessene. The six wetland community types in the Des Plaines River Valley, previously flagged in the field, and described in a Cover Type Report are delineated in the 2000 Wetland Technical Delineation Report. Two new wetland sites (12A and 41A) were delineated. Several new artificial ponds (sediment retention basins) have been constructed within the Project Corridor. These are not considered to be wetlands, and are not described in the 2000 Wetland Technical Delineation Report. Species lists and Floristic Quality Indices are only reported for those sites considered to be of at least fairly good natural quality. Table 2-14 categorizes by type the 39 wetlands delineated in the Project Corridor in the June 2000 update. Table 2-15 inventories individual wetlands delineated by the June 2000 update. Exhibits 2-11 through 2-13 locates these wetlands.

<b>Table 2-14</b> <b>Year 2000 Summary of Wetlands by Type</b>		
<b>No. of Wetlands</b>	<b>Wetland Type</b>	<b>No. of Hectares (Acres)</b>
<b>16</b>	Emergent	32.93 (81.35)
<b>6</b>	Unconsolidated bottom	1.25 (3.08)
<b>3</b>	Farmed	0.78 (1.92)
<b>11</b>	Forested wetlands	17.91 (44.25)
<b>3</b>	Excavated	0.74 (1.82)
<b>Totals 39</b>		53.61 (132.42)

#### **2.11.4 Floodplains**

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to [1996 FEIS, Section 2.11.4](#).

#### **2.11.5 Seeps**

No substantive change has occurred to this resource since publication of the 1996 FEIS. Refer to [1996 FEIS, Section 2.11.5](#).

Table 2-15 Summary of Wetland Characteristics in the Project Corridor <sup>1/</sup>								
Map <sup>2/</sup> No.	NWI Classification <sup>3/</sup>	NRCS Classification <sup>4/</sup>	Predominant Vegetation	Soil Type <sup>5/</sup>	Basin Structure	Floristic Quality Index <sup>6/</sup>	Functional Values <sup>7/</sup>	Wetland Size, hectares (acres)
1	PEMC	W	narrow leaf cattail	Ashkum	Depression in crop Field	Low	Sediment and nutrient trapping, water-fowl habitat	0.43 (1.06)
6	ND (PEMC)	W	sandbar willow reed canary grass	Ashkum	Depression	Low	Sediment and nutrient trapping	0.28 (0.70)
8	PEMAf	FW/TD	rough barnyard grass rough cocklebur	Ashkum	Low, Level Area	Low	Sediment and nutrient trapping, water-fowl habitat	0.34 (0.83)
9A	PFO1C	ND (W)	tussock sedge water smart weed	ND (prev. Ashkum)	Depression	20.4	Sediment and nutrient trapping	0.31 (0.77)
9B	PFO1C	ND (W)	american elm box elder grey dogwood clustered black snakeroot eastern poison ivy	Ashkum	Depression	Low	Sediment and nutrient trapping	(See 9E)
9C	PEMC PFO1C	ND (W)	broad leaf cattail bur reed	ND	Depression	Low	Sediment and nutrient trapping	1.62 (4.0)
9D	PEMC PFO1C	ND (W)	black willow sandbar willow reed canary grass	ND	Depression	Low	Sediment and nutrient trapping	(See 9E)
9E	PEMC	ND (W)	eastern cotton-wood black willow reed canary grass	ND	Depression	Low	Sediment and nutrient trapping	3.49 (8.63) Also includes 9B and 9D.
10	PEMC		reed canary grass quack grass eastern cotton-wood	ND (prev. Ashkum)	Low, Level Area	Low	Sediment and nutrient trapping	1.1 (2.7)
12	PEMC	W	reed canary grass	ND (prev. Ashkum)	Depression	Low	Sediment and nutrient trapping	0.51 (1.25)
12A <sup>9/</sup>	ND (PEMC)	ND (W)	reed canary grass	Ashkum	Depression	Low	Sediment and nutrient trapping	0.12 (0.30)
14	PUBGh	W	sandbar willow reed canary grass narrow leaf cattail	ND	Depression (pond)	Low	Sediment and nutrient trapping	0.40 (1.0)
16	PUBFx	ND (W)	sandbar willow reed canary grass tall buttercup	ND	Depression (pond in active live-stock pasture)	Low	Sediment and nutrient Trapping, water-fowl habitat	0.21 (0.51)

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17	PFO1C	ND (W)	reed canary grass river bulrush	ND (prev. Ashkum)	Along Big Run Creek, low, level area	17.2	Sediment and nutrient trapping, wildlife habitat, flood storage	0.85 (2.1)
18	PFO1C	ND (W)	green ash american elm box elder common snake-root reed canary grass	Ashkum	Along Big Run Creek, low, level flood plain	20.6	Sediment and nutrient trapping, flood storage, and wildlife habitat	2.3 (5.7)
20	ND (PFO)	ND (W)	silver maple swamp white oak poison ivy	Ashkum	Headwaters of two streams, low, level area	19.8	Flood storage	1.28 (3.17)
21	ND (PFO)	ND	swamp white oak green ash poison ivy	Ashkum	Low, level area	Low	Flood storage	0.29 (0.72)
22	ND (PEM)	ND	green ash common cattail reed canary grass	ND (prev. Ashkum)	Low, level area	Low	Sediment and nutrient trapping	0.41 (1.02)
23	ND (PFO/SS)	ND (W)	american elm pale dogwood green ash panicled aster	Ashkum	Low, level area	Low	Sediment trapping, flood storage	0.47 (1.15)
24	ND (PUB)	ND	pale dogwood common duck-weed white willow	ND	Depression (pond)	Low	Sediment trapping, flood storage	0.07 (0.18)
25	ND (PEM)	ND	gray dogwood panicled aster	Ashkum	Low, level area	18.8	Small site with high diversity	0.16 (0.40)
26	PUBGx	W	rice cutgrass sandbar willow narrow leaf cattail	ND	Depression (pond)	Low	Sediment trapping, flood storage	0.18 (0.44)
28	PUBG	ND (W)	black willow sandbar willow narrow leaf cattail	ND	Depression (pond)	Low	Wildlife support	0.44 (1.1)
30	PEMC	W	black willow reed canary grass narrow leaf cattail	Ashkum	Depression	Low	Sediment and nutrient trapping	0.89 (2.2)
31	PEMC	ND (W)	pond weed narrow leaf cattail	ND	Excavated Depression	17.6	Sediment and nutrient trapping	0.79 (1.95)
32	ND (PFO)	ND	cottonwood black willow reed canary grass	ND	Low, level area	Low	Wildlife support	0.65 (1.6)
33	PEMC	ND	quackgrass redbtop panicled aster	Ashkum	Low, level area	Low	Flood storage, wildlife habitat	0.73 (1.8)

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34	ND (PUB)	ND (W)	rice cutgrass common cattail	ND	Depression (pond)	Low	Sediment and nutrient trapping, flood storage and wildlife habitat	0.14 (0.35)
35	PUBG	ND (AW)	narrow leaf cattail	ND	Excavated Depression	Low	Sediment and nutrient trapping flood storage, waterfowl habitat	0.12 (0.29)
37	PUBF	ND (AW)	box elder side flowered aster reed canary grass	ND	Partially filled depression	Low	Sediment trapping	0.06 (0.16)
38	PUBGx	ND (AW)	box elder reed canary grass	Drummer	Depression	Low	Flood storage	0.35 (0.87)
39	PEMC	ND (W)	cottonwood black willow fowl manna grass virginia wild rye	Drummer	Near headwaters of branch of Black Partridge Creek, low, level area	15.6	Sediment and nutrient trapping, flood storage	0.48 (1.18)
41	PEMAf	ND (W)	common cattail crack willow narrow leaf cattail sandbar willow	ND (prev. Drummer)	Depression	Low	Sediment and nutrient trapping	0.31 (0.76)
41A <sup>9/</sup>	ND (PEMAf)	ND (W)	narrow leaf cattail	ND	Depression adjacent to pond	Low	Sediment and nutrient trapping	0.13 (0.33)
42 <sup>9/</sup>	PEMF PSSI/EMF PFO1C	ND	common cattail narrow leaf cattail rice cutgrass reed canary grass	ND (mapped as Romeo, Sawmill, pits/quarry)	Flood plain adjacent to Des Plaines River	Low	Sediment trapping, flood storage, wildlife habitat	16.9 (41.6) <sup>8/</sup>
43	PEMF PSSI/EMF	ND (W)	silver maple reed canary grass	ND (mapped as Romeo)	Flood plain of the Des Plaines River	Low	Sediment and nutrient trapping, flood storage, wildlife habitat	9.7 (24) <sup>8/</sup>
44	PFO1C PEMF	ND	cottonwood black willow box elder reed canary grass rice cutgrass blue joint grass	Sawmill and ND (mapped as Sawmill and Romeo)	Flood plain of Des Plaines River	17.9	Sediment trapping, flood storage, wildlife habitat	4.9 (12.1) <sup>8/</sup>
46 <sup>9/</sup>	PFO1C	ND	fowl manna grass jewel weed rice cutgrass	ND (mapped as Romeo)	Flood plain of the Des Plaines River	20.7	Sediment and nutrient trapping, flood storage	0.4 (1.0)

Table 2-15 Summary of Wetland Characteristics in the Project Corridor <sup>1/</sup>								
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47 <sup>9/</sup>	PEMF PFO1C	ND	coon's tail duck weed pond weed	ND (mapped as Romeo and pits, quarry)	Flood plain of Des Plaines River	Low	Sediment trapping, flood storage	1.8 (4.5)
							<b>Total Size of Wetlands in FAP Route 340 Project Corridor</b>	<b>53.61 hectares (132.42 acres)</b>

1/ All potential wetlands within 300 meters (1,000 feet) of the proposed centerline of the Preferred Alternative were reexamined. Determinations were performed using the three parameter criteria (Environmental Laboratory 1987). Current delineations completed by Plocher and Tessene (2000).

2/ Wetlands keyed to map (Exhibits 2-12, 2-13, 2-14, 4-2, 4-3 and 4-4) with exception of those that no longer fit the criteria to be classified as wetlands (No. 2, 11, 13 and 36).

3/ Wetland Class as depicted on National Wetland Inventory (NWI) maps (Mokena, Joliet, and Romeoville 7.5 minute Quadrangles): ND (Not depicted on maps); NWI codes in parenthesis from Plocher and Tessene (1992).

4/ Wetlands are depicted on National Resource Conservation Service (NRCS) maps key: W (Wetland); FW/TD (Farmed Wetland, tile drained); AW (Artificial Wetland); ND (Not depicted on maps). NRCS codes in parenthesis from 1992 Wetland Technical Delineation Report.

5/ All soil types are hydric soils. Soil types from field observations (Plocher and Tessene (2000)). "Undetermined" indicates that the site is permanently flooded and that soil characterization was not done. The soil is considered saturated for a long duration during the growing season and, therefore, meets the hydric soil criterion.

6/ The Floristic Quality Index, Developed by Taft, Ladd, Wilhelm and Masters (1997) and previously named the Natural Areas Rating Index, was only applied to the vegetation of sites considered to be of at least fairly good natural quality.

7/ Functional Values were derived from observation.

8/ These wetlands extend for approximately 16 kilometers (10 miles) along the Des Plaines River. The size of forested and emergent areas refers to the Project Corridor only.

9/ These sites have been added or divided since the publication of the 1992 Wetland Survey.